Energy Efficiency

How to save energy in the kitchen...

what every caterer needs to know
 Choosing a refrigerator with an energy efficient design

Choose equipment with the following features wherever possible to ensure minimal energy consumption:

- **Small Temperature Control**—means that your refrigerator automatically adapts to cope with how you use it. Sometimes a refrigerator will have to work much harder than others, for example a refrigerator placed in a high ambient (warm) fast food outlet, with very frequent door openings will work much harder than a storage fridge in a small school kitchen.
- **Modulating storage temperature at the correct range**
- **Adjusting fan operation accordingly**
- **Adjusting Defrost operation accordingly**

This results in optimised energy usage. Smart Temperature Control also adapts to cope with seasonal changes, so you can always be assured that your refrigerator is working as efficiently as possible.

**Automatic Defrost** ensures the refrigerator is always running at maximum performance, by initiating ‘Defrost’ mode to remove ice build-up. This saves on energy usage and prolongs the lifecycle of the coil.

**Energy Efficient Fans** some manufacturers have improved energy efficiency by using fewer fans and more energy efficient components in the refrigerator system itself.

**Automatic Fan Cut-Out**—when the door is open to avoid wasting energy

**Large Capacity Evaporator**—this ensures efficient cooling, preventing unnecessary changes in refrigerating temperature

**Door Alarms** that alert the user if the door is left open accidentally

**Self-Closing Doors**—ensure that doors are not left open

**USING YOUR FRIDGE**

Energy efficient tips for the caterer

To maximise efficiency, you should ensure that a refrigeration engineer services your equipment regularly. How frequently a service is required will depend on site conditions. For example, a dusty hospital or bakery environment will need more regular servicing due to dust build-up on the coil, as well as a fast food outlet where the refrigerator is subject to the griddle, causing high grease build-up. Ask your service engineer how often they recommend servicing. To obtain optimum performance this will be a minimum of once per year but could be as frequently as every 4-6 months.

Regular servicing can have a dramatic effect on energy consumption.

**SERVICE**

To ensure that the energy consuming equipment has stepped up a gear.

- **Problem**
- **Increase in Energy Usage**
  - Partially blocked condenser
  - 22%
  - 150% Refrigerant leak
  - 100%
  - Faulty door seal
  - 11%
  - Incorrect temperature settings
  - 6%

**Failure to carry out regular checks can also result in system failure, and subsequent need to replace key components such as the compressor or condenser fan.**

Regular maintenance also prolongs the life of the equipment and reduces repairs, which has environmental impact and affects running costs. A standard Service & Maintenance Check should include the following:

- **Thorough cleaning including evaporators and condenser, fan blades and heat exchangers**
- Check drain lines are secure and clean
- Check oil levels in compressor where possible
- Check condenser and state of wiring
- Check Automatic Defrost system
- Check efficiency and condition of door gaskets, lock, hinges and fasteners
- Check refrigeration system for leaks
- Test operating temperature
- Check and advise upon location and site conditions
- Check loading

**MAINTENANCE**

You can minimise energy usage by carrying out the following in-house maintenance checks:

- **Clean the condenser coils monthly.** Condenser coils allow the hot refrigerant inside their tubes to cool off; if they are covered in dust, dirt or soot it will reduce the efficiency of the system. Regular cleaning removes dust from the coil, allowing the refrigerator to work harder, wasting up to 23% more energy. To clean the coils, simply unplug the unit, and carefully vacuum or brush them

- **Door seals and gaskets**—Check the seal between the door and the refrigerator’s shell regularly to ensure no warm air is getting in - the seal should be tight enough to hold a piece of paper securely when closed

- **Defrost**—build-up reduces your refrigerator’s cooling ability. Ideally you should choose a refrigerator and freezer with an **Automatic Defrost** as this ensures that defrosting automatically takes place at the optimum time
General energy saving tips in the kitchen

Saving energy makes an immediate difference to your company’s bottom line, and you protect the environment too. Global warming is caused by greenhouse gases such as carbon dioxide, a by-product of all types of energy consumption. By using energy more efficiently we can help to reduce carbon dioxide emissions, reducing the rate of climate change and the damage to the environment.

The Carbon Trust offers free energy surveys, energy efficient loans and an energy helpline as well as various publications and fact sheets to help you cut down your energy usage. Contact the Carbon Trust to receive your free energy-saving programme starter pack; call 0800 085 2005. In the meantime, the tips below provide a start point:

COOKING

- Size up your pans. Match the size of your pot or pan to the burner you’re cooking on. If the pot is too small, energy will escape around the sides. If it’s too big, you’ll need more energy to heat the outside of the pan.
- Preheat no longer than 10 minutes to avoid burning energy unnecessarily, and turn the oven off straight after cooking.
- Cook several dishes in one session – use a tiered steamer and all the shelves when using the oven.
- Avoid opening the oven door unnecessarily - this drops temperature by around 15ºC.
- When boiling food, such as vegetables, keeping the lid on will trap the steam and cook the food faster.
- Ensure the door seals on your oven are in good condition.
- Regularly clean the hotplate reflectors to ensure maximum heat reflection.
- Make meals in slow cookers or pressure cookers for economy.

GENERAL

- Fit a 7 day timer to vending machines and water coolers so that they are not unnecessarily using electricity at night and over the weekends.
- Don’t leave a tap dripping. Each cubic metre of water costs nearly £2.
- Ensure water temperatures are set correctly. Water should be heated to 60ºC to protect against Legionella. Water at hand washing sinks should ideally be set to 43ºC.
- Set your heating thermostat to reasonable levels. The statutory aim is 19ºC
- Ensure heaters are not blocked by furniture, as this not only causes a fire hazard, but inhibits the distribution of heat.
- If it gets too hot in the winter, don’t open a window, turn down the heater first.
- Ensure all extractor fans are off overnight and when not required.
- Don’t leave doors open between areas of different temperatures.
- Keep doors and windows closed in air-conditioned areas.
- Try to use as much natural light as possible and ensure windows are kept clean.
- Switch off lights whenever there is no-one in the room, and make sure the last to leave in the evenings turns off all lights.

Renewable energy

Renewable electricity from sources such as wind, wave and solar energy is crucial in helping cut harmful carbon dioxide emissions which can contribute to global warming. The Government’s Climate Change Programme and Energy White Paper require that by 2010, renewable energy should be contributing 10% of the UK’s electricity supply. This contribution should be doubled by 2020 - helping the country reach its ambitious target of UK carbon emission reductions. Less than 4% of our electricity supply currently comes from renewable sources. The main sources of renewable energy being considered are biomass, geo-energy, hydro-electric, hydrogen, solar, tidal, wave and wind.

In time, it should be an option for most of us to change electricity supplier to a green supplier using renewable sources, like wind or hydro. Contact the Centre for Alternative Technology for further information (Tel: 01654 705 950).

Sources


For further information:

Food Standards Agency www.food.gov.uk
The Carbon Trust www.carbontrust.co.uk
Scottish Energy Efficiency Office www.energy-efficiency.org
Centre for Sustainable Energy www.cse.org.uk
Centre for Alternative Technology www.cat.org.uk

Foster Blue papers include:

HACCP - An Update 2006
The ECA Scheme
The safe way to Blast Chill, Freeze and Thaw
Hydrocarbons in Refrigeration - What caterers need to know
The Climate Change Levy
Coldroom Panels, Polyurethane Foam & Fire Ratings: An Update
Food Temperature Laws
Inspection by Environmental Health Officers
Food Safety and E. Coli
Handling and Serving Ice
Safe Food Storage
Plan for a Catering Crisis
Food Hygiene & Staff Training

For copies of our Blue Papers, visit www.fosterrefrigerator.co.uk/food_safety or call 0843 216 8800